

B&W Fuels INC (PWS 3230073)
SOURCE WATER ASSESSMENT REPORT

RGT 03-11-04

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State of Idaho
Department of Environmental Quality

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Executive Summary

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality (DEQ) is completing the assessments for all Idaho public drinking water systems. The assessment for the B&W Fuels Inc. drinking water source is based on a land use inventory within a 1,000 foot radius of the well source, sensitivity factors associated with the source, and characteristics associated with either your aquifer or watershed in which you live.

This report, Source Water Assessment for B&W Fuels Inc. (PWS # 3230073) describes the public drinking water system, the associated potential contaminant sources located within a 1,000 foot boundary around the drinking water source, and the susceptibility that may be associated with any associated potential contaminants. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the B&W Fuels Inc. water system.** 

The B&W Fuel Inc. is located north of Emmett in Gem County (see Figure 1). The non-community transient water system has one well located approximately 10 feet west from the convenience store. The system has two connections and serves a population of approximately 25 people. Water quality tests conducted for the well during 2003 do not show elevated levels of chemicals. Nitrate was detected in the water at a concentration of 2.02 mg/L in 2003, which is well below the maximum contaminant level of 10 mg/L. Currently, there is no treatment process for the water system.

The final susceptibility ranking for the well is high for IOC, VOC, SOC, and microbial contaminants (see Table 2). A copy of the susceptibility analysis for the B&W Fuels Inc. well along with a map showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000 foot boundary have been summarized and included in Table 1.

Potential Contamination

The potential contaminant sources identified within the delineated area include leaking underground storage tanks (LUSTs), underground storage tanks (USTs), service stations, above ground storage tank (AST), farm equipment repair, auto lubrication service, hydraulic equipment supply, stormwater injection wells, septic systems, and Highway 52 (see Table 1 and Figure 2). If an accidental spill occurred on the highway inorganic chemical (IOC) constituents (e.g. nitrate), volatile organic chemical (VOC) constituents (e.g. petroleum products), synthetic organic chemical (SOC) constituents (e.g. pesticides), and microbial contaminants (e.g. bacteria) could be added to the groundwater. The LUSTs, USTs, and AST contained petroleum products and are a potential source of VOCs and SOCs in the groundwater. The various machinery repair/service facilities could potentially be a source of IOCs, VOCs, and SOCs to the groundwater. The stormwater injection well could be a conduit for IOCs, VOCs, SOCs, and

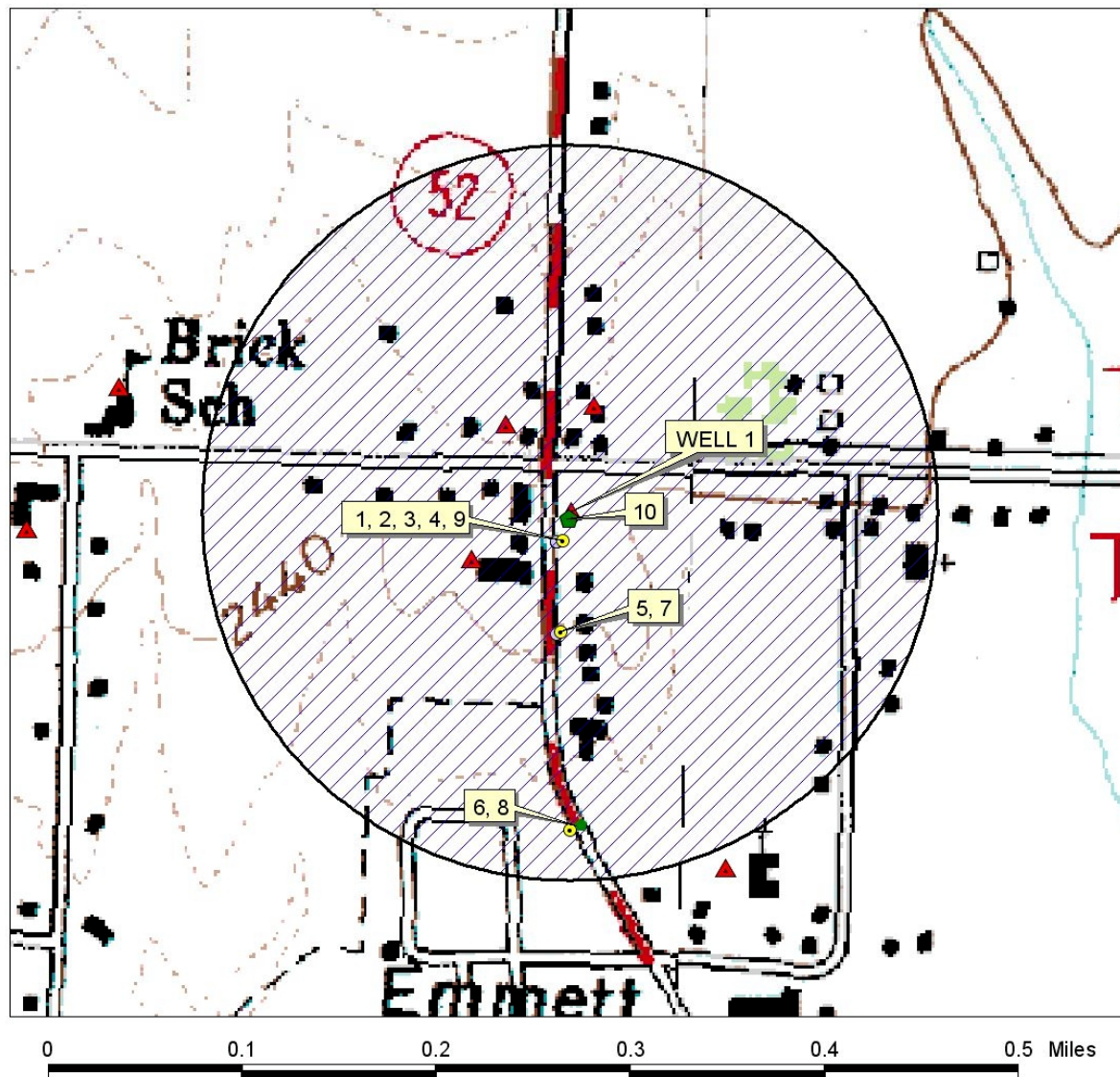
microbial contamination into the groundwater. Potential contaminants from septic systems include IOCs and microbial.

Table 1. B&W Fuels Potential Contaminant Inventory

Map ID	Source Description	Source of Information	Potential Contaminants¹
1, 3, 9	LUST - cleanup completed UST - closed Service Station	Database Search	IOC, VOC, SOC
2, 4	LUST - cleanup incomplete UST - closed	Database Search	VOC, SOC
5	UST – closed	Database Search	VOC, SOC
6	Farm Equipment Repair	Database Search	IOC, VOC, SOC
7	Auto Lubrication Service	Database Search	IOC, VOC, SOC
8	Hydraulic Equipment Supply	Database Search	IOC, VOC, SOC
10	AST	Database Search	VOC, SOC
	Highway 52	GIS Map	IOC, VOC, SOC, M
	Stormwater Injection Well	SWDHD Notice of Construction and Shallow Injection Well Inventory Form	IOC, VOC, SOC, M
	Convenience Store	GWUDI Field Survey	IOC, VOC, SOC
	Septic System	GWUDI Field Survey	IOC, M

¹IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

Figure 2. B & W Fuels Inc. Delineation Map and Potential Contaminant Source Locations



PWS# 3230073
Well 1

Susceptibility Analysis

The susceptibility of the drinking water source to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity or system construction, the land use characteristics, and potentially significant contaminant sources. Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in another category(ies) results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic chemical (e.g. nitrates, arsenic) contaminants, volatile organic chemical (e.g. petroleum products) contaminants, synthetic organic chemical (e.g. pesticides) contaminants, and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each drinking water source is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement.

The hydrologic sensitivity was rated high for the well. This rating is based upon moderate-to-well drained soil characteristics defined by the Natural Resource Conservation Service. The well is also considered sensitive due to the gravel layer, which dominates the vadose zone (zone from land surface to the water table). There are clay layers that cumulatively are 19 feet thick present in the subsurface to provide a low-permeability barrier between possible surface contaminants and the water-producing zone. The required 50 feet cumulative thickness identified in the SWA Plan (DEQ, 1999) is not met. In addition, the depth to first ground water identified during drilling was 47 feet below ground surface (bgs) in a sand layer, less than the required 300 feet documented in the SWA Plan (DEQ, 1999). Water was also present between 63 and 73 feet bgs in sand and gravel and is considered the main water-bearing zone.

The well's system construction was rated moderate. The well was drilled in December of 1977 to a depth of 77 feet bgs. The static water level at the time of drilling was 47 feet bgs. The well has a 0.250 inch thick, 6 inch diameter casing from the surface to 75 feet bgs. The required casing thickness is 0.280 of an inch for a well casing that is six inches in diameter (IDWR, 1993). The casing is perforated from 64 to 75 bgs and extends into non-water bearing shale. The well's clay surface seal extends through a low permeability hardpan unit to a depth of 18 feet bgs into water bearing gravel. According to the 1999 sanitary survey, the wellhead has a gasket type sanitary seal and is in good condition. The well is located outside a 100 year floodplain and the well is protected from flooding.

The B&W Fuels Inc. rated high (Table 2) for potential contaminant sources and land use for VOCs (e.g., petroleum products), IOCs (e.g., nitrates), SOC (e.g., pesticides), and microbial contamination (e.g., total coliform). The leaking underground storage tanks (LUSTs), underground storage tanks (USTs), aboveground storage tank (AST), service stations, various automotive and machinery facilities, stormwater injection wells, septic systems, and the presence

of Highway 52 within the delineated source water assessment area contributed to the high rankings. In addition, the site is located within an Organics Priority Area for pesticides (SOCs), which added to the high rating. The dominate land use in the delineation is irrigated agriculture, and the county level of nitrogen fertilizer use is moderate, which both added to the high rating for IOC.

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. In addition, having sources within 50 feet of the wellhead gives an automatic high score for the type of contaminant in question. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3 year time of travel zone (Zone 1B) and a large percentage of agricultural land contribute greatly to the overall ranking.

The final susceptibility ranking for the well is high for IOC, VOC, SOC, and microbial contaminants (see Table 2) due to the high number of sources, and the lack of low permeability soils protecting the aquifer from surface contamination. In addition, the convenience store is within 50 feet of the wellhead, causing the ratings to be automatically high. A copy of the susceptibility analysis for the B&W Fuels Inc. well along with a map showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000 foot boundary have been summarized and included in Table 1.

Table 2. Summary of the B&W Fuels Inc. Susceptibility Evaluation

	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory ²				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbial		IOC	VOC	SOC	Microbial
Well	H	H	H	H	H	M	H	H	H	H

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility

²IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

Protection Activities

For the B&W Fuels Inc. water system, drinking water protection activities should focus on evaluating possible sources of contamination such as those identified in this assessment. Working with the local soil and conservation district and Gem County will better inform the

water system of chemicals that may be applied or stored near the drinking water well. The water system is also encouraged to develop a drinking water protection plan to document and rank potential contaminant sources, assess protection efforts, and provide education for staff and the public about the drinking water. Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations are near urban and residential land uses areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineations; therefore the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

Assistance

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact Pamela Smolczynski in the Idaho Department of Environmental Quality Boise Regional Office at (208) 373-0461.

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mlharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few heads to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of storm water runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (IDEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25% of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RCRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by IDEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

References Cited

Idaho Department of Environmental Quality, 1999. Source Water Assessment Plan.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

The final scores for the **B&W Fuels Inc.** susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

1. System Construction		SCORE			
Drill Date	12/20/77				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1999			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	7	9	9	3
(Score = # Sources X 2) 8 Points Maximum		8	8	8	6
Sources of Class II or III leacheable contaminants or	YES	6	9	9	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	0	0	2	0
Land use Zone 1B	Greater than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	18	10
Cumulative Potential Contaminant / Land Use Score		5	5	5	5
4. Final Susceptibility Source Score		15	15	15	15
5. Final Well Ranking		High	High	High	High